



08/984 099

FIGURE 1A



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340 GAA AAA CCC GAT TTC CCC AAA TGG GAA AAG CCT AAA GAG CAC GAG AAA  
Glu Lys Pro Asp Phe Pro Lys Trp Glu Lys Pro Lys Glu His Glu Lys>  
400 \* 420  
CAC GAA GTC GAA TAT CCG AAA ATA CCC GAG TAC AAG GAC AAA CAA GAT  
His Glu Val Glu Tyr Pro Lys Ile Pro Glu Tyr Lys Asp Lys Gln Asp>  
440 460 480  
GAG AAT AAG AAA CAT AAA GAT GAA GAG TGC CAG GAG TCA CAC GAA TCG  
Glu Asn Lys Lys His Lys Asp Glu Glu Cys Gln Glu Ser His Glu Ser>  
500 \* 520  
AAA GAG CAC GAA GAG TAC GAG AAA GAA AAA CCC GAT TTC CCC AAA TGG  
Lys Glu His Glu Glu Tyr Glu Lys Glu Lys Pro Asp Phe Pro Lys Trp>  
540 560  
GAA AAG CCT AAA GGG CAC GAG AAA CAT AAA GCC GAA TAT CCG AAA ATA  
Glu Lys Pro Lys Gly His Glu Lys His Lys Ala Glu Tyr Pro Lys Ile>  
580 600 \* 620  
CCT GAG TGC AAG GAA AAA CTA GAT GAG GAT AAG GAA CAT AAA CAT GAG  
Pro Glu Cys Lys Glu Lys Leu Asp Glu Asp Lys Glu His Lys His Glu>  
640 660  
TTC CCA AAG CAT GAA AAA GAA GAG GAG AAG AAA CCT GAG AAA GGC ATA  
Phe Pro Lys His Glu Lys Glu Glu Lys Lys Pro Glu Lys Gly Ile>

FIGURE 1B



|   |             |
|---|-------------|
| GTA CCC TGA GTG GGT TAA AAT GCC TGA ATG GCC GAA GTC CAT GTT TAC<br>Val Pro *** Val Gly *** Asn Ala *** Met Ala Glu Val His Val Tyr> | 720         |
| TCA GTC TGG CTC GAG CAC TAA GCC TTA AGC CAT ATG ACA CTG GTG CAT<br>Ser Val Trp Leu Glu His *** Ala Leu Ser His Met Thr Leu Val His> | 760         |
| GTG CCA TCA TCA TGC AGT AAT TTC ATG GGA TAT TGT AAT TAT ATT GTT<br>Val Pro Ser Ser Cys Ser Asn Phe Met Gly Tyr Cys Asn Tyr Ile Val> | 800 *       |
| AAT AAA GAT GGT GAG TGG GAA ATG TGT GTG ATT CAT CCA TGA<br>Asn Lys Lys Asp Gly Glu Trp Glu Met Cys Val Cys Ile His Pro ***>         | 840 860     |
| GCA ATG CTG AAT CTC TTT GCA TGC ATA GAG ATT CTG AAT GGT TAT AGT<br>Ala Met Leu Asn Leu Phe Ala Cys Ile Glu Ile Leu Asn Gly Tyr Ser> | 880 900 *   |
| TTA TGT TAT ATC GTT TGT TCT AGT GAA ATT AAT TTT GAA TGT TGT ATG<br>Leu Cys Tyr Ile Val Cys Ser Ser Glu Ile Asn Phe Glu Cys Cys Met> | 920 940 960 |
| TAA TGT T<br>*** CYS XXX>   |             |

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## FIGURE 1C



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|              |             |             |             |             |              |     |
|--------------|-------------|-------------|-------------|-------------|--------------|-----|
| ACTAAAGGGA   | ACAAAAGGCTG | GAGCTCCACC  | GCGGGTGGCGG | CCGCTCTAGA  | ACTAGTGGAT   | 60  |
| 20           |             |             | 40          |             |              |     |
|              |             |             |             |             |              |     |
| 80           |             |             | 100         |             |              |     |
|              |             |             | *           |             |              |     |
| CCCCCGTGGGA  | CTAAACAAAA  | CATGGGAAGA  | TTTGCTGTAA  | AAAAATAAAA  | GAAGCTTA     |     |
| 140          |             |             | 160         |             |              |     |
|              |             |             |             |             |              |     |
| CAATAACACT   | TTGTGAATTG  | TATACAAAAG  | ACTCAATGAA  | AAACAATAAC  | TCAATAACACT  | 180 |
|              |             |             |             |             |              |     |
| 200          |             |             | 220         |             |              |     |
| *            |             |             |             |             |              |     |
| TTTTTTCACT   | GATTACATC   | CTTTATATAG  | GCTGAAACTA  | CAACAACTTT  | AGCTAAAAAA   |     |
|              |             |             |             |             |              |     |
| 260          |             |             | 280         |             |              |     |
|              |             |             |             |             |              |     |
| ATAGGATAAC   | CTAAATAGCAA | AATCACAAATC | AGATATTAAA  | CCATGATTTC  | AGCTAACCAT   |     |
|              |             |             |             |             |              |     |
| 320          |             |             | 340         |             |              |     |
| *            |             |             |             |             |              |     |
| TTAACAACTT   | TATTGAAACT  | AATTGAAATA  | TTTCATCTGC  | TGATATGCC   | AAGATTTAG    | 360 |
|              |             |             |             |             |              |     |
| 380          |             |             | 400         |             |              |     |
|              |             |             | *           |             |              |     |
| GCCCACTAACCC | GATTGGTGG   | TGAACCTTAA  | CATGTCATGC  | ATTTGTA     | ACT GTTGAACA |     |
|              |             |             |             |             |              |     |
| 440          |             |             | 460         |             |              |     |
| *            |             |             |             |             |              |     |
| AGTTTTTGC    | ATTATTTTAC  | TATATGAACT  | TTTGATTAG   | GTTGAGTTAC  | ACACTGAGCT   | 480 |
|              |             |             |             |             |              |     |
| 500          |             |             | 520         |             |              |     |
| *            |             |             |             |             |              |     |
| TGTAAGCTCA   | CTCAAATTTC  | TCTAATTCT   | AAGGTGATCA  | GCAAACCTTAG | GACCGGGGG    |     |
|              |             |             |             |             |              |     |
| 560          |             |             | 580         |             |              |     |
|              |             |             |             |             |              |     |
| CGTACGGAGAG  | CTCGGATTGA  | TTTTCTAGTT  | AATAAAATAAG | ACGATTATG   | TTTTTAAACT   |     |
|              |             |             |             |             |              |     |

Figure 2A



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|            |             |             |            |                                  |
|------------|-------------|-------------|------------|----------------------------------|
| 620        |             | 640         |            | 660                              |
| ATTATGGACT | TTTGGACTA   | TGTAACGTGTT | TGGGACTTTA | TTTTTGTTT TTATTTGCTT             |
| 680        |             | 700         | *          | 720                              |
| TTTTGGATT  | TAGTAATTAT  | TATTTTAAA   | CTGCCAAATT | ATATGTTTTT ACAAACTAACG           |
| 740        | TCACAGTTT   | CAAAATTCCA  | TAACCTAGAA | TTTTCGCTG CAAATAAAG TAATCATTTA   |
| 800        | *           | 820         |            | 840                              |
| AGTGTGTTT  | CTGTAATAAA  | ATAAATAAAT  | AATTAAACG  | AGTATTTCAG AGTATTTC TAAAAATGG    |
| 860        |             | 880         | *          | 900                              |
| AAATTGATT  | ACCCAAATTAA | GTATGTCAAA  | ACACATGTTT | ATATGTTACA GGGCGATATC            |
| 920        | GCTCTAGGCAA | ATAAACATCTA | GGCGGGTTT  | GGAGGTGTTAC AGGGCGAGTG GGCTCATTT |
| 980        |             | 1000        | *          | 1020                             |
| GAGTAAGTAT | AGTAGGGCC   | GAGTTTAGA   | TTGCATATTC | AAGGTCAAAG ATTTTGTAAG            |
| 1040       | CTTCGATGAA  | TGATATGTAT  | GATTGTCGGA | TTAACGAAAT ATGTTTTTT CTTTGTGTG   |
| 1100       |             | 1120        | *          | 1140                             |
| TGTTTTATCT | C GTGTGATAA | GTATATAGTA  | TGTTTATTTC | CAATTCTTAT GGCATGTGAC            |
| 1160       |             | 1180        |            | 1200                             |
| ATGTGGCTA  | TTCATTAA    | ATTGATTGT   | TATTTGAA   | ATCTGATGCA TCTGTTCTAC            |

Figure 2B



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|      |   |      |                               |      |
|------|---|------|-------------------------------|------|
| 1220 | AAAGCATGGA ATCTCATGCC TACTGCTTC TGTTAAAGAT                        | 1240 | ACGATTGCAA GTTAAACATG         | 1260 |
| 1280 |   | 1300 | *                             | 1320 |
|      | CTTACTATT TGATTTTGTC CTTGCATGCT ATGTACATT ACATGGGTT GGGATGATA     |      |                               |      |
| 1340 | GGTAAGGAGG AAGTTTGAC AGTTAAATGA                                   | 1360 | TTTGCACAT CTGGTGGTT ACCACATAT | 1380 |
| 1400 | *   | 1420 |                               | 1440 |
|      | TGTGTATGGC ATCTTGACTG CGGTATGGT GGCTCGACCG CCCATATCTG TTCTGGAAAT  |      |                               |      |
| 1460 |   | 1480 |                               | 1500 |
|      | TTATCTGTGA CTCTGGTGGC ATTGCTACA ATTATTGTT GGTGTGGTT GGATGGACGA    |      | *                             |      |
| 1520 | GTCGTGGGA ACTCTATTG GTGTGTTGCG GAGTTGGTA GGAAATTTC GAAAAAATT      | 1540 |                               | 1560 |
| 1580 | *   | 1600 | *                             | 1620 |
|      | TGCATTGTT GTTTCTGAAA AATATTGCAT TAACATAATC ATGCATTCCTC AATTGGTC   |      |                               |      |
| 1640 | AATTGAAACGT TATAAAATT CCTATGATAT CCTGATCTGT TTATTACATT ATATGGTT   | 1660 |                               | 1680 |
| 1700 | *   | 1720 |                               | 1740 |
|      | ATGGCTTGAGT TAAGTCAAC ATTGAGATTG ATAGCTCACC CAATTATTAA ATCATTTCAG |      |                               |      |
| 1760 |   | 1780 |                               | 1800 |
|      | GCAATCTGCA GACTTAGGAT TGGATGGCGT TCAGGAGCTT GGATTGGTT TCTCACATCA  |      | *                             |      |
| 1820 | TATTTATTAA ATTAAATT ATTAAATT TATGGACTTT TGGACTGTCT GACTAATT       | 1840 |                               | 1860 |

Figure 2C



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20 ACTAAAGGG ACAAAGCTG GAGCTCCACC GCGGTGGCGG CCGCTCTAGG ATCCCCCGTG 40 60  
80 \* 100 120  
GACTAAACAA AACATGGGAA GATTGCTGT AAAAATAAA AAGAAGCTTA CTCATAACA  
140 160 180  
CTTGTGAAT TGTATACAAA AGACTCAATG AAAAACATA ACTCAATAACA CTTTTTTCA  
200 220 240  
CTGATTTACA TCCTTTAT AGGCTGAAAC TACAACAACT TTAGCTAAA AAATAGGATA  
260 \* 280 300 \*  
ACCTAATAGC AAAATCACAA TCAGATATTAA AACCATGATT TTAGCTAAC ATTAAACAC  
320 340 360  
TTTATTGAAA CTAATTGAA TATTTCATCT GCTGATATGC CCAAGATTG AGGCCACTAA  
380 \* 400 420  
CCGATTTGGT GGTGAACCTT AACATGTCA GCATTGTAA CTGTTGAAA CAAGTTTT  
440 460 480  
GCATTATT ACTATATGAA CTGTTGATT AGGTTGAGTT ACACACTGAG CTTGTAAGCT  
500 \* 520 540  
CACTCAAATT TTTCTAATT CTAAGGTGAT CAGCAAACTT AGGACCCGGGC GGCGTACGAG

Figure 3A



|      |  |      |      |
|------|--|------|------|
| 560  | AGCTCGGATT GATTtTCTAG TTAATAAATA AGACGATTAA  | 580  | 600  |
| 620  | CTTTTGGAC TATGTAACTG TTGGGACTT TATTtttGTT    | 640  | 660  |
| 680  | TttTAGTAATT ATTATTTTTA AACTGCAAAA TTATATGTT  | 700  | 720  |
| 740  | TTCAAAATTc CATAACTTAG AATTtttTCCG TGCAAATAA  | 760  | 780  |
| 800  | TTCtGTAAATA AAATAAATAA ATAATTtTAA CGAGTATTtT | 820  | 840  |
| 860  | TTACCAAAAT TAGTATGTCA AACACATGT TTATATGTTA   | 880  | 900  |
| 920  | AAATAACATC TAGGGGGGT TTGGAGTGT ACAGGGCGAG    | 940  | 960  |
| 980  | ATAGTTAGGG CCGAGTTTA GATTGCATAT TCAAGGTCAA   | 1000 | 1020 |
| 1040 | AATGATATGT ATGATTGTCC GATTAACGAA ATATGTTTT   | 1060 | 1080 |

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|             |            |             |            |              |              |
|-------------|------------|-------------|------------|--------------|--------------|
| 1100        | *          | 1120        | 1140       |              |              |
| CTCGTGTGAT  | AAGTATATAG | TATGTTTAT   | TCCAATTCTT | ATGGCATGTG   | ACATTGTGGC   |
| 1160        |            | 1180        | 1200       | *            |              |
| TATTCATAATT | AAATGATT   | GTATTATTG   | AAATCTGATG | CATCTGTCT    | ACAAAGCATG   |
| 1220        |            | 1240        | 1260       |              |              |
| GAATCTCATG  | CCTACTGCTT | TCTGTTAAAG  | ATACGATTGC | AAGTTAACCA   | TGCTTACTAT   |
| 1280        |            | 1300        | 1320       | *            |              |
| TTTGATTTCG  | TCCTTGCATG | CTATGTCACA  | TTACATGGGG | TTGGGATGAT   | ATGGTAAGGA   |
| 1340        |            | 1360        | 1380       |              |              |
| GGAAGTTTG   | ACAGTTTAAT | GATTGCACT   | ATCTGGTGGT | TTAACACAT    | ATTGGTTATG   |
| 1400        | *          | 1420        | 1440       |              |              |
| GCATCTTGAC  | TGCCGTTATG | GTGGCTCGAC  | CGCCCATATC | TGTTCTGGAA   | ATTATATCTGT  |
| 1460        |            | 1480        | 1500       | *            |              |
| GACTCTGGTG  | GCATGTCTA  | CAATTATTG   | TTGGTGTGTT | TTGGATGGAC   | GAGTCGTGGG   |
| 1520        |            | 1540        | 1560       |              |              |
| GAACTCTATT  | TGGTGTGTTG | CGGAGTTGGG  | TAGGAAATT  | TCGAAAAAAA   | TTTGCATGT    |
| 1580        |            | 1600        | 1620       | *            |              |
| GTTTTCTGA   | AAATATTCG  | ATTAAACATAA | TCATGCATT  | TCAAATTGTTGG | TCAAATTGAAAC |

Figure 3C



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1640 1660 1680  
GTTATAAAAT TCTCTATGAT ATCCTGATCT GTTTATTACA TTATATGTGT TTATGCTTGA  
1700 1720 1740  
\*  
GTTAAGTCAA ACATTGAGAT TCATAGCTCA CCCAATTATT TAATCATTTC AGGCAATCTG  
1760 1780 1800  
\*  
CAGACTTAGG ATTGGATGGC GTTCAGGAGC TTGGATTGGT TTCTCTCACAT CATATTAT  
1820 1840 1860  
TAAATAATAA TTAAATTAAA TTTATGGACT TTTGGACTGT CTGACTAATT TTCAGAATT  
1880 1900 1920  
\*  
TATTTGGTT TTGGGTTTG TTGAATTTT TAGATAATT TTTTAATAT TCTGCATAAT  
1940 1960 1980  
TTTTCTGTTA TTGAAAAGG ATGTCGAAT TTTTTTCAA AATTGAAACG TTTAAGAATT  
2000 2020 2040  
\*  
TTTACTACTG CAAATTCAA ATAAGTGAAT TTGTTTTTA GAAAGATTAA ATAAGTTAGT  
2060 2080 2100  
\*  
ATTACGATT TTAGTTGAT TTGGTGGAAA GTAATGTATG TTGTTGAACA TAATTATTTG  
2120 2140 2160  
ACAATAATAA AGTTTTCTAG GGAATAAACG GAAATATCTT CTTCTTTTTT GTAAATAAC

Figure 3D



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|      |   |                                   |       |
|------|---|-----------------------------------|-------|
| 2180 | TAATGCAAGA ACAAAACAACG TTTGGGGAG          | CAAATAATCT AGCTTTAAGT AGTCAGTGTAA | 2220  |
| 2240 | ACTCTCAAAA TCTGGTCATA ACTTCTAGGC          | TGAGTTTGCT GTGCTACAGT AGTAAGTCTA  | 2280  |
| 2300 | TAGAAACTTA CCTGACAAAA CGACATGACG          | TCAGGGTTCGA ATCTACAACT TTTCCTTTTT | 2340  |
| 2360 | CTTCAATTAA CATATGGTTG ATTCAAGTTC          | CGATCTATAA TAATTATTA CGATTATCA    | 2400* |
| 2420 | ATTCAATTAA CCTTTATATCA TCCTTATTATA        | AATATAAGTC AGTTCAATT AGTTTTTCGAA  | 2460  |
| 2480 | AGTTCCAAA AATTGGAAAT TTATTAAAT TTATTCCCTA | AAACCGAAAT AGTTATATCT             | 2520  |
| 2540 | TTCAAATTAA AGTTTCATT TTCAATCCGA           | TTTCAATTTC ATCCCTTTAT AACTCTCTAT  | 2580  |
| 2600 | TATCTATAATT TACATAAATT TCAAATTAAAT        | TTTGAATAAT TTACACTTTA GTCCCTAAAGT | 2640  |
| 2660 | TCAAAACTAT AAATTTTCAC TTTAGAAATT          | AATCATTTT CACATCTAAG CATCAAATT    | 2700* |

**Figure 3E**



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|   |       |       |
|---|-------|-------|
| 2720  | 2740  | 2760  |
| AACCAAATGA CACAAATTTC ATGATTAGTT AGATCAAGCT TTTGAGTCTT CAAAACATAA   |       |       |
| 2780  | 2800* | 2820  |
| AAATTACAAA AAANAAACAA ACTTAAACATC ATTATCAAT TTGAACACACA AAGCTTG GCC |       |       |
| 2840  | 2860  | 2880  |
| GAATGCTAAG AGCTAAAAA TGGCTTCTTT TGTTCTTTT TGTTGC AAC GGTGGAGAGA     |       |       |
| 2900*   | 2920  | 2940  |
| AGAGGGAAAT GAAGATTGAC CATATTTTT TATTATGTT TAACATATAA TATTAATAAT     |       |       |
| 2960  | 2980  | 3000* |
| TTAAATCATAA TTATACTTTC GTGAATGTGA CAGTGGGAG ATACGTAAAG TATTTTAAC A  |       |       |
| 3020  | 3040  | 3060  |
| TTATACTTT TGCAAGCAGT TGGCTGGCT ACCCAAGAGT GATCAAAGTT TGAGCTGCC      |       |       |
| 3080  | 3100* | 3120  |
| TCAATGAGCC AATTTTGCC CATAATGGAT AAAGGCAATT TGTTTAGTTC AACTGCTCAC    |       |       |
| 3140  | 3160  | 3180  |
| AGAATAATGT TAAATGAAA TAAATAAG GTGGCCTGGT CACACACACA AAAAAGACT       |       |       |
| 3200*   | 3220  | 3240  |
| AATGTTGGTT GGTTGAATT TATATTACGG AATGTAATAT TATATTAA ATAATAATTAA     |       |       |

Figure 3F



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|                                  |                       |                     |
|----------------------------------|-----------------------|---------------------|
| 3260                             | 3280                  | 3300                |
| TGTATTAG ATTCTTAATA TTTGGAGCA    | TTCCATACTA TAATTCGTA  | ACATAATATT          |
| *                                | *                     | *                   |
| 3320                             | 3340                  | 3360                |
| AAAATATAGT AATATAAAGT GTAATTAAC  | TTAAATTACA AGCATAATAT | TAATTTGGA           |
| 3380                             | 3400                  | 3420                |
| ATCAAATTAA TTTTATTCT ATTATTTAA   | TTAATTAGT CTATTTTTC   | AAATAAAAT           |
| *                                | *                     |                     |
| 3440                             | 3460                  | 3480                |
| TTAAATCTAA ATAAAATAA TTTTCCTTA   | ATGTTGAAAC            | AACTCATGTT          |
|                                  | ATACTTC               | ATACTTC             |
| 3500                             | 3520                  | 3540                |
| ATTATAAGTA TTATATTAC CTFGATGATT  | TATTTATTAG            | TATATTAACTTGATTATAA |
| *                                | *                     |                     |
| 3560                             | 3580                  | 3600                |
| TTATGGGGG ATACAATCGC TTTCCACTAA  | ATATTTAAC             | TATGATTATTAATTT     |
|                                  |                       | *                   |
| 3620                             | 3640                  | 3660                |
| CAACATCGTA TATTACTTA TTAAATACATA | ATTATCATA             | ATTTTATGGA          |
|                                  |                       | ATTGAGACC           |
| 3680                             | 3700                  | 3720                |
| AAGAACATT AAGAGAACAA ATTCTATAAC  | AAAGACAATT            | TAGAAAAAA           |
|                                  | *                     | TGTACTTTA           |
| 3740                             | 3760                  | 3780                |
| GGTAATTAA AGTACTCTTA ACCAACACAA  | AAAATTCAA             | TCAAATGAAC          |
|                                  |                       | TAATAAGAT           |



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|  |      |                  |
|--|------|------------------|
| 3800   | 3820 | 3840             |
| AATATAACAT ACGGAACATC TTACTGTAA TCTTACATT CCATAAATT ATTATGAAAA     |      |                  |
| 3860   | 3880 | 3900             |
| ATAATCTTAT ATTACTCGAA CTAATGTTG TCACAAATTA TTATCTAAAT AAAGAAAAAC   | *    |                  |
| 3920   | 3940 | 3960             |
| ACTTAATT TATAACATT TTTCATATAT TTGAAAGATT ATATTTGTA TATTTACGTA      |      |                  |
| 3980   | 4000 | 4020             |
| AAAATATTG ACATAGATTG AGCACCTCT TAACATAATC CCACCATAAC TCAAGTATGT    | *    |                  |
| 4040   | 4060 | 4080             |
| AGATGAGAAA TTGGTACAAA CAACGTGGGG CCAAATCCCC CAAACCATC TCTCATTCTC   |      |                  |
| 4100   | 4120 |                  |
| TCCTATAAAA GGCTTGCTAC ACATAGACAA CAATCCACAC A CA AAT ACA CGT TCT   | *    |                  |
| <Lys Lys Arg Asn Ser *** Gly His                                   |      | <Ile Cys Thr Arg |
| 4140   | 4160 | 4180             |
| TTT CTT TCT ATT TGA TTA ACC ATG G CTCATAGCAT TCGTCACCCT TTCTTCCCTT |      |                  |
| 4200   | 4220 | 4240             |
| TCCAACTTT ACTCTAAAGT GTCTCACTAG TGACCCGGTAG CCACACTGTT TCGGCAGGG   | *    |                  |
| 4260   | 4280 | 4300             |
| CTCGACGTTT ATTGGAGACA CAAGAACCT CATCAGAGCT CCCACAAATTG GCTTCAAAAT  | *    |                  |

Figure 3H



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|            |             |             |             |             |             |            |      |      |
|------------|-------------|-------------|-------------|-------------|-------------|------------|------|------|
| 4320       | ACGAAAAGCA  | CGAAGAGTCT  | GAATACGAAA  | AGCCAGAAATA | CAAACAGCCA  | AAGTATCAGC | 4340 | 4360 |
| 4380       | *           |             |             |             |             |            | 4400 | 4420 |
| AAGAGTACTC | AAAACATTGAG | AAGCCTGAAA  | TGCAAAAGGA  | GGAAAAACAA  | AAACCCTGCA  |            |      |      |
| 4440       |             |             |             |             |             |            | 4460 | 4480 |
| AACAGCATGA | AGAGTACCCAC | GAGTCACACG  | AATCAAAGGA  | GCAAAAAGAG  | TACGAGAAAG  |            |      |      |
| 4500       | *           |             |             |             |             |            | 4520 | 4540 |
| AAAATCTCGA | CGGGCCCGAA  | GATCTTGCT   | AGCCGTGAC   | GCCCCGGGGA  | ATTCTGTCGAG |            |      |      |
| 4560       |             |             |             |             |             |            | 4580 | 4600 |
| CCTTGAATCA | TATGACGCTG  | GTGCATGTGC  | CATCATCATG  | CAGTAATTTC  | ATGGTTATATC |            |      | *    |
| 4620       |             |             |             |             |             |            | 4640 | 4660 |
| GTAATATATA | GTAAATAAAA  | AAGATGGTGA  | TTGGAAATG   | TGTGTGTGCA  | TTCCTCCATG  |            |      |      |
| 4680       |             |             |             |             |             |            | 4700 | 4720 |
| CACTAATGGT | GAATCTCTTT  | GCATACATAG  | AAATTCTAAA  | TGGTTATAGT  | TTATGTTATA  |            |      | *    |
| 4740       |             |             |             |             |             |            | 4760 | 4780 |
| GTGTATGTTG | TAGTGAAGKT  | AATTTTAAAT  | GTGTATCTA   | ATGTTAACAT  | CACTTGGCTT  |            |      |      |
| 4800       | *           |             |             |             |             |            | 4820 | 4840 |
| GATTTATGTT | ATGTTATGTA  | TTTTTACTTTA | ATGATATTGCA | ATGTATTGTT  | AATTAAACAT  |            |      |      |
| 4860       |             |             |             |             |             |            | 4880 | 4900 |
| TGCTTGATCA | TTTAACTCTT  | CTACTTAA    | TTATAAATGG  | CACTGTTTGT  | TTTAAACTTT  |            |      | *    |

Figure 3I



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|                                   |                         |                       |
|-----------------------------------|-------------------------|-----------------------|
| 4920                              | 4940                    | 4960                  |
| TTACAAGTTA AGACATGTAT AAATAATGAA  | CAATATAATT ACAAGTTTA    | GTTCATGGTT            |
| 4980                              | 5000*                   | 5020                  |
| AGCTATCTTA GTATGTTATT GATGATCTTA  | ATTACATTTA AACAAATTCC   | ACTTAAATT             |
| 5040                              | 5060                    | 5080                  |
| TTAATAAAATA ATAACAAATA ATTATGTGAA | TATAATACAT TAAATGCAAAC  | AAAAAAATGAA           |
| 5100*                             | 5120                    | 5140                  |
| ATAAAATAAA TAAAATAGCA AATAAATTGTT | ATAATATTGT ATATAATAAT   | GTACCATATT            |
| 5160                              | 5180                    | 5200*                 |
| CTTAACTGAA ATAGGGTCTA ACCTATAATC  | CCTAAATTT CCTAAATTT     | CAGTTTAAAT ATTTTTATAC |
| 5220                              | 5240                    | 5260                  |
| CTGCCATATT ATTAGAACTC TTTTTAAATA  | TATTAATAATT TTAATTATAAC | CAATTAAATT            |
| 5280                              | 5300*                   | 5320                  |
| TAAACTATT ATTATCTTAA CTAAAATCTA   | AAATTTTATT TAACCTATTAA  | ATTAAAATTCC           |
| 5340                              | 5360                    | 5380                  |
| TAATTATCTT ATCTAATTAA AACTCTAAT   | TATCCTTAATT TGATTAAAT   | TCTTGATTAT            |
| 5400*                             | 5420                    | 5440                  |
| CTTAAATTGT AACCTCCTCC ACCCAGCTAG  | ATGCTGGACC CGAATCCGGG   | AGATTACATC            |

**Figur 3K**

5460

5480

5500

OIPE  
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SINGAPORE  
GGCATTGAGA TGGCCCTAGTA GTGATCAGGG TTTTCTAGAG GTACCCATT CGCCCTATAG  
TGAGTCGT

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|           |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
|-----------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| AAAAAACAA | ATG | AGC | ACT | GCA | AGA | TTT | ATC | AAG | TGT | GTC | ACG | GTC | GGT | GAT | 50  |
| Met       | Ser | Thr | Ala | Arg | Phe | Ile | Lys | Cys | Val | Thr | Val | Gly | Asp |     |     |
| 15        |     |     |     |     |     |     |     |     |     |     |     |     |     | 10  |     |
| GGG       | GCT | GTG | GGG | AAA | ACT | TGT | ATG | CTC | ATT | TCA | TAT | ACC | AAT | ACT | 98  |
| Gly       | Ala | Val | Gly | Lys | Thr | Cys | Met | Leu | Ile | Ser | Tyr | Thr | Ser | Asn | 30  |
| 15        |     |     |     |     |     |     | 20  |     |     |     |     |     |     |     |     |
| TTC       | CCA | ACG | GAT | TAT | GTT | CCA | ACA | GTA | TTT | GAT | AAC | TTT | AGT | GCC | 146 |
| Phe       | Pro | Thr | Asp | Tyr | Val | Pro | Thr | Val | Phe | Asp | Asn | Phe | Ser | Ala | Asn |
|           |     |     |     |     |     |     |     |     |     |     |     |     |     | 45  |     |
| GTG       | GTG | GTG | GAT | GGC | AGC | ACA | GTG | AAC | CTT | GGC | CTA | TGG | GAC | ACT | 194 |
| Val       | Val | Val | Asp | Gly | Ser | Thr | Val | Asn | Leu | Gly | Leu | Trp | Asp | Thr | Ala |
|           |     |     |     |     |     |     |     | 50  |     |     |     |     |     |     |     |
| GGG       | CAA | GAA | GAT | TAT | AAT | AGG | CTA | AGG | CCA | CTG | AGT | TAT | AGA | GGA | 242 |
| Gly       | Gln | Glu | Asp | Tyr | Asn | Arg | Leu | Arg | Pro | Leu | Ser | Tyr | Arg | Gly | Ala |
|           |     |     |     |     |     |     |     | 65  |     |     |     |     |     |     |     |
| GAT       | GTG | TTG | TTG | GCC | TTT | TCT | CTT | ATA | AGC | AAG | GCC | AGT | TAT | GAA | 290 |
| Asp       | Val | Phe | Leu | Leu | Ala | Phe | Ser | Leu | Ile | Ser | Lys | Ala | Ser | Tyr | Glu |
|           |     |     |     |     |     |     |     | 80  |     |     |     |     |     |     |     |
| AAC       | ATC | TAC | AAA | AAG | TGG | ATC | CCA | GAG | CTA | AGA | CAT | TAT | GCT | CAT | 338 |
| Asn       | Ile | Tyr | Lys | Lys | Trp | Ile | Pro | Glu | Leu | Arg | His | Tyr | Ala | His |     |
|           |     |     |     |     |     |     |     | 95  |     |     |     |     |     |     |     |
| GTA       | CCA | GTT | GTG | CTT | GTA | ACC | AAA | CTA | GAT | TTG | CGA | GAT | GAC | AAG | 386 |
| Val       | Pro | Val | Val | Leu | Val | Gly | Thr | Lys | Leu | Asp | Leu | Arg | Asp | Asp |     |
|           |     |     |     |     |     |     |     | 115 |     |     |     |     |     |     |     |
| CAG       | TTC | CTC | ATT | GAT | CAC | CCT | GGA | GCA | ACA | CCA | ATA | TCA | ACA | TCT | 244 |
| Gln       | Phe | Leu | Ile | Asp | His | Pro | Gly | Ala | Thr | Pro | Ile | Ser | Thr | Ser | Gln |
|           |     |     |     |     |     |     |     | 130 |     |     |     |     |     |     |     |
|           |     |     |     |     |     |     |     |     |     |     |     |     |     | 140 |     |

FIGURE 4A



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GGA GAA CTA AAG AAG ATG ATA GGA GCA GTT ACT TAT ATA GAA TGC  
GLY Glu Leu Lys Lys Met Ile GLY Ala Val Thr Tyr Ile Glu Cys  
145 150

AGC TCC AAA ACC CAA CAG AAT GTG AAG GCT GTT TTC GAT GCT GCA ATA  
Ser Ser Lys Thr Gln Gln Asn Val Lys Ala Val Phe Asp Ala Ala Ile  
160 165 170

AAA GTA GCT TTG AGG CCA CCA AAA CCA AAG AGA AAG CCT TGC AAA AGG  
Lys Val Ala Leu Arg Pro Pro Lys Pro Lys Arg Lys Pro Cys Lys Arg  
175 180 185 190

AGA ACA TGT GCT TTC CTT TGAATAATTGG ATCATTTA CAGTCAAAAA  
Arg Thr Cys Ala Phe Leu  
195

CAGTTACAA AAGCTGTTGC AGATAAACAC TGAATCTGCT ATAGTTGTT TTGGTTTAC  
ATATGTTCCA CGTGAAACTA TGAAGCATCT CTAAGAAAAAC CCAAACATATC ATATCAACCC  
626 746

ATCGATCAAT GAATCGATT CAATTTCGC AGTATAAGTT CCTTTTAATC CTTTCTTTT 806

ACTTCATTT ATAACGAATT CTATGGATAA TGTTCCCTAC AAACATGTCA TTACAATGTT  
866

TAATTATAAA TTCCATTCTT CTATTTTACT AAAAAAAA AAAA  
910



|   |     |                        |             |                        |     |
|---|-----|------------------------|-------------|------------------------|-----|
| TTGGATGAGA ACCAATTTC  | 20  | AATAGTAAAN CCTAACCAAT  | 40          | TTTTAATAAT AAAGCTGACT  | 60  |
|   | 80  | *                      | 100         |                        | 120 |
| CCTAGTACAA GAGCTTTAT  |     | TCATTCTTCT ATTTCGCTT   | CCTCTAGGCT  | TGGCAAATCGA            |     |
| GAATTTTCTT GTGTACAAAT   | 140 | ATAATAATA CATCGTAGAA   | 160         | ATAAAATTAA TTCAAATTGA  | 180 |
|   | 200 | *                      | 220         |                        | 240 |
| AGTCTTAACC ATCTTAATA  |     | TTTGTAGATG TAATTAAAT   | GAAAGATAAA  | TACATATTCT             |     |
| TGGACATGTA TTTTCATCTT   | 260 | AATGTTTGTG GCTTTGGTGA  | TAGGTGTATT  | GATGTACGAT             |     |
| GTCTTTAAA TCACATATCA  | 320 | CATTTTGACT TTGTATGATG  | 340         | ATAAGTCGAC ATAANCAGAAA | 360 |
|   | 380 | *                      | 400         | *                      | 420 |
| TATGGTGTGA TCTTCACTT  |     | TGAACATTGTA TAAGTCACCA | AACTTTAACCA | AAAGTTTGATT            |     |
| GTGTACATAT ATATATATAT   | 440 | CTTCAAATT TATAATAAA    | ATTGTGTTTA  | AATAATTTCAC            | 480 |
|   | 500 | *                      |             |                        | 540 |
| AGTTATATA TTTTTTATC   |     | TCTAATTAA TTGTGCGCCA   | AAATTTTAGT  | TGATATTAA              | 600 |
| ACATAAAAAA AATTGTACAC ATTTCACAAGC CCATATACAA ATAATTATAT AAATATTCA | 580 |                        |             |                        | *   |

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FIGURE 5A



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|            |            |             |            |             |              |            |      |
|------------|------------|-------------|------------|-------------|--------------|------------|------|
| TAAAAAATAT | ATTAAATAT  | AGGATATAAA  | TATAACTATT | TTAGAATTAT  | TCTACTTTAA   | 660        |      |
|            |            |             |            |             |              | 640        |      |
| 620        |            |             |            |             |              |            |      |
| 680        |            |             |            |             |              |            |      |
|            |            | *           |            |             |              | 720        |      |
|            |            |             |            |             |              |            |      |
| GATAACATAG | GTAAATGTA  | TAATTAATAA  | GGTAGTTA   | TTGTAAGAT   | GAGTATATAT   |            |      |
|            |            |             |            |             |              |            |      |
| 740        |            |             |            |             |              |            |      |
| GTCGTAAACA | TAATCACTAA | CCATTTTAT   | TAACCTCTTG | GTTCGAAGT   | TCCAAAAGAGA  | 780        |      |
|            |            |             |            |             |              |            |      |
| 800        |            |             |            |             |              |            |      |
| *          | AAATGGAAGG | GAAATTGAG   | AGTAAGTTCA | TGTTTATATT  | ATACATAATG   | AAGTTGATGT |      |
|            |            |             |            |             |              |            |      |
| 860        |            |             |            |             |              |            |      |
| TTTCTCTTT  | TTAATATTTT | TATACAAAT   | ATTAAATAAA | AATAATTAAAG | GATTGAATGA   | 900        |      |
|            |            |             |            |             |              |            |      |
| 920        |            |             |            |             |              |            |      |
| AAAATATAAT | GAAAGTCGTT | T'TACTAATAG | TCATATTGCA | TTTTGTCGCA  | TCTACTTTAA   | 940        |      |
|            |            |             |            |             |              |            |      |
| 980        |            |             |            |             |              |            |      |
| TAATAGATAA | ATTAATTGTG | GTACATTAGA  | TCAAGAACAA | AACTAGATT   | TGTCCCCATTTC | 960        |      |
|            |            |             |            |             |              |            |      |
| 1040       |            |             |            |             |              |            |      |
| TATTGTTAAA | AGCTGGTCCG | TTTACATTAA  | AATAAGGTAC | ATGTTACATG  | CCACGTATAAA  | 1060       |      |
|            |            |             |            |             |              |            |      |
| 1100       |            |             |            |             |              |            |      |
| *          | CTATCTGGTT | ATTCTATCAA  | TCACGCTAAT | TTTTAACAGT  | AGAAATGAAT   | GTAATTTTTA | 1120 |
|            |            |             |            |             |              |            |      |
| 1160       |            |             |            |             |              |            |      |
| AATAGAAAGG | GTCAAATGT  | TATTGATCT   | AACACGTAGG | GATTAATTAA  | CTTATTTC     | 1180       |      |
|            |            |             |            |             |              |            |      |
|            |            |             |            |             |              | 1200       |      |
|            |            | *           |            |             |              |            |      |
|            |            |             |            |             |              |            |      |

FIGURE 5B



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|                                 |            |             |            |            |
|---------------------------------|------------|-------------|------------|------------|
| TAAAGAAATA AGTAAATAT AATTGAAATC | TTAATACAA  | AACTTCATG   | ATACTTTAT  | 1260       |
| 1220                            | 1240       |             |            |            |
| 1280                            | 1300       | *           |            | 1320       |
| CATATTTAC TTATAATTAA ATATTGTGAG | AGTAACAAAR | TTAAAAAACAA | TAGAAACACC |            |
| 1340                            | 1360       |             |            | 1380       |
| AAAAGTTAGT TATGGTGTGA           | CTCATATACA | CAGTTAAAT   | TTGAATAAT  | TTTTTCTTC  |
| 1400                            | 1420       |             |            | 1440       |
| GTCATTAATT CCATCATGGG           | TTTTTTTTT  | TCTAGTTAAG  | CCATAATTAT | CAAAATAATC |
| 1460                            | 1480       |             |            | 1500       |
| ATCATAATC CTATCAATAC            | CCCGCCCTGC | CTCCCTCCCT  | CAAACTTAA  | ACCCAACTAA |
| 1520                            | 1540       |             |            | 1560       |
| CACCCAGCAC CAAACGCACT           | TTAATAGCCA | CCTATTCTA   | GCCATGTCCT | TGCACTTAA  |
| 1580                            | 1600       | *           |            |            |
| GAAAGTAAA GCTAACCTGC            | AATCATTCCA | TATCGAGGCC  | TCAACAGATA | AAGTTGGTTG |
| 1640                            | 1660       |             |            | 1680       |
| ATGGTTGC ACCAAGTTGT             | TAACACCCGG | CCCTCAACTT  | CCCTTTCTT  | TTCATCCTCC |
| 1700                            | 1720       |             |            | 1740       |
| CCACTCCACA CCCTCCAAATT          | TCTTCATAT  | GGTTCTTATA  | TAAGTTCTTT | ATAATCACAG |
| 1760                            | 1780       |             |            | 1800       |
| AATCAAGATA AGTCCTCAGC           | AAACAAAAAA | CCATGGCTCT  | CGAGCAAGAT | CTGGACTAGT |

FIGURE 5C



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|             |            |             |              |             |             |      |
|-------------|------------|-------------|--------------|-------------|-------------|------|
| CAGAGCTCTG  | AATATTGGAT | CATTATTACA  | GTCAAAAAACAA | GTAAACAAAAA | GCTGTTGCAG  | 1860 |
| 1820        |            |             | 1840         |             |             |      |
| 1880        |            |             | 1900         | *           |             | 1920 |
| ATAAACACTG  | AATCTGCTAT | AGTTTGTTT   | TGGTTTACAT   | ATGTTCCACG  | TGAAACTATG  |      |
| 1940        | AAGAAAACCC | AACTATCAT   | ATCAAACCCAT  | CGATCAAATGA | ATCGATTCA   | 1980 |
| 2000        | *          |             | 2020         |             |             | 2040 |
| ATTTTCGGCAG | TATAAGTCC  | TTTAATCCT   | TTCTTTTAC    | TTCATTTTAT  | AACGAATTCT  |      |
| 2060        |            |             | 2080         |             |             | 2100 |
| ATGGATAATG  | TTCCCTACAA | ACATGTCATT  | ACAATGTTA    | ATTATAAATT  | CCATTCTCT   | *    |
| 2120        | GATATTAGTA | ACTTCAAACCT | GCTGATTTT    | ACTAATTAT   | TATTATAAA   | 2160 |
| 2180        | *          |             | 2200         | *           |             | 2220 |
| TTGTTAGAAT  | GATTATTTT  | CAATAATTAA  | ACAAACAATAT  | TAAATATTAT  | TATTATTATT  |      |
| 2240        | TTTATTAAA  | CAAAACATA   | AATTTTTGAC   | AAATTAAAAT  | AAATGAATTAA | 2280 |
| 2300        | *          |             | 2320         |             |             | 2340 |
| ATTTCTCAAT  | TTTCGTCGA  | ACTATTACAA  | AAATCCTCA    | TAGTCCTAAT  | CCTAAATTGTA |      |
| 2360        |            |             | 2380         |             |             | 2400 |
| TGCAGAGGTG  | ATAATAATCT | TAATTGATG   | CAGAGGTAAT   | AATGGGCCGG  | GTTTGAGCTG  | *    |

**FIGURE 5D**



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|      |               |            |             |             |            |            |      |
|------|---------------|------------|-------------|-------------|------------|------------|------|
| 2420 | TGATATTGAC    | GTACTTTATA | TTTTCCAAA   | TTCAACCCAG  | CTCGAAATAT | 2460       |      |
| 2480 | *             | *          | 2500        |             |            | 2520       |      |
| 2540 | TTTTGTCCAA    | TTTAATCCAA | GCCCCATTAA  | AGTTCGTCCA  | TATTATTTTT | 2580       |      |
| 2600 | *             | ATTTTATATC | ATTTTATTT   | AATATTAA    | TATTTTATAT | 2640       |      |
| 2660 | *             | *          | 2620        |             |            | 2700       |      |
| 2720 | TATATATTTAGGT | TTATTTGTT  | AATAAACTTA  | AAAATGGTC   | TGTGGGCTA  | *          |      |
| 2780 | GACTGGACC     | TTAAATGCTC | AAACTCAAAC  | TTAATTCTATA | TTTTAAACAG | GCTTAATATT | 2760 |
| 2840 | TTTATTACA     | CTGTTTCAA  | TTTTTCGGGT  | GAAATATCTT  | CGAGTCTAGA | TTAATAACAC | 2880 |
| 2900 | CACAGGTCTA    | ATTTGATGCT | CAATGAAAAAT | GAAATCATAT  | TGAGCTTAAT | TAATATTCCA | 2940 |
| 2960 | TTCTTCTTGT    | CTGAAAGGAC | CAAGCAATTG  | GAGTACATT   | AAGGTTAAAG | AGTATGGGAT | 3000 |
|      | CCGCCAAACC    | TGCCCAATG  | TCTCTTCAAC  | CATCCAAAAA  | CTTGAGTCAG | TATCACATAC | *    |

FIGURE 5E

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ATGTACCGNT ATTTATTAT TTATTGAAT TGGCATTATT TCTTG  
3020 3040

FIGURE 5F



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GGGCATTCCA CACGACCATG TGTCGCCAT TTTAGGCAT TTTCAGGCTT CACCTAAACT 60  
TCTAGAGTTG TTTCAAAATTA GCCCCTATT GTCTCTTAAT CATTCTAGGA TCTTGTAAAC 120  
TCGTATTAG GACTAAATGT GTAATTATA CTTAATTAT GATTGATTAA TTGATGTGATT 180  
TNGTAGTAAT GCCCGTGACC CTAATCCGTT AGCGAAGAGG GGTTAGGGGT TAGGGGTTT 240  
ATTATTATT TTTAGATATT GTATAACTCT TGTTTTATT TTAAATTGT TACTATTCA 300  
AAGGCATTG TTTGTAGTGT TATTTCGAGT AGGTCTTATG GGTGAACAAAC CCTTGACCGC 360  
CAAATCAATC ACAAGAGTTTC AACATTTTAT TTATTTGAA ATGTATTAAA AATCGTTAAT 420  
CTATATATTC GCCCCATTAT TGGGATTAAA TATTCAAAAG GGTTAGACC GTCATGAGAC 480  
AGATTAGTTT TATCTTACTG ATGGTCACAT CACAATAGTA ATTCAACTTA ATACGGAGGG 540  
AACCATTTGAT TCACGCCAATT GGTCATCGCA CTITAGTTGAA AAGCTAGGGG TGCGAAGCTA 600  
CCGTACGGCTG GATTATGATT GAACACCTCT AAGTCAGAAT CCGAATTAGA AACAAATGCAC 660  
GTGTCCGGTTG CCTGATTGCC AACCCCCAATA ACACGTGTG TAGGTTAAC CATGTTTATG 720  
AAAGATAAGG TTTTTTTTT TATAAGCAAG CAACTATAGG GGTTTACTTC CGTGGCAAA 780  
TTTTAGGTT ACCTATTGTG GGAGGGGGGA TTATGATTCA AGTGAAGAA AGTTGGCACA 840  
CACACAATCA GTACATCTGT TTTGACAGAG ACACAGCCTA AAAACAGCAG CAAACAAAGCC 900  
TAAAGGAATC ACCCAAAAC AACAAACCAA AGTACAGAGG AAAACAAAAG AATCCCTGT 960  
ACCAACCAAGC TGAAAAAAAG AAAATAAAAC TCAACTTTG GCAATAAAAA CCCTCTTACCC 1020  
CTCAACCCCT AACCAAGCAA CAATCAGCAA TACTCCAAAGC AACCATTTTC CTTACAAAGTT 1080

FIGURE 7A



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TGTTTTCTT GTGATTAAATC CAT ATG GCT AGC TCC ATG TCC CTT AAG CTT GCA 1133  
Met Ala Ser Ser Met Ser Leu Lys Leu Ala>  
  
TGT CTG CTA GTG TTG TGC ATG GTG GTG GGT GCA CCC CTG GCT CAA CGG 1181  
Cys Leu Val Leu Cys Met Val Val Gly Ala Pro Leu Ala Gln Gly>  
  
GAC GTA ACC CGT GCT GAT GGC GTC GTC ACC CTT CCA CGC TGC CTT CCT 1229  
Asp Val Thr Arg Ala Asp Gly Val Val Thr Leu Pro Arg Cys Leu Pro>  
  
TTA TTG ATA GGG AAT GGT AAT GGT GCT GAT GCT GAT GTT GAT GCC CCA 1277  
Leu Ile Gly Asn Gly Asn Gly Ala Asp Ala Asp Val Asp Ala Pro>  
  
GCT TGC TGC GAC ATC GTC AGG CGT CTC TRG AGC TCG CTC TGT GGT 1325  
Ala Cys Cys Asp Ile Val Arg Gly Leu Ser Ser Leu Leu Cys Gly>  
  
GGT GTT TAGGAACCG ATCTAGCTTG AAATCGGGTT CGGATAACGGG TGGAGTTCA 1380  
Gly Val>  
  
AATTGGTGTG TTATGGAATC CCAAATTAAT CGTGTAGG CGTGGATCC AATTGGTGTGA 1440  
TACATTACAG AGCATGGTGTG TGGATTGTTT TCTCATATGT TTTGATTGAC TTGCTGTATA 1500  
CATGGATGA TTCGATAAGG TGACCGGGTT ACCTGGGTAT CCAACCATCA TCCGATTACT 1560  
TTTTAATAAT TATTGGTTTC TTCTTTATGT TTGTCTGTCTT TTTCCTTCTT GATCTATAAC 1620  
ATTATATTG CCCAAATTTC CGCATTTC ATATGTAGCT TATATATGTA TATATATATT 1680  
CAATAAGTA TATTGATTAA GCAGATGATT TTGTTATATA TTAAATCAA ATCAAACATT 1740  
AATGATCATT CACTAGCGTC TTAATCTTGA AAAATTCA TC AACGGTTATC CTTTGAGCA 1800  
TATATAAAA AAATTGCCAA CCCTATGCTT TTACACCTAA TTCAAGGGAT AACATAAGTC 1860  
GATAAAAACCG A 1871

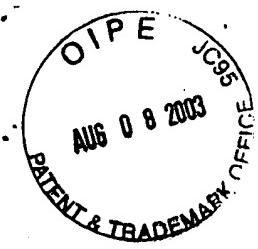
FIGURE 7B

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| Coker 130        | Yxy, Y             | Yxy, x             | Yxy, Y             | Lab, L             | Lab, a         | Lab, b           | LCh, L             | LCh, C           | LCh, h           |
|------------------|--------------------|--------------------|--------------------|--------------------|----------------|------------------|--------------------|------------------|------------------|
| 1                | 80.35              | .3206              | 0.3206             | 91.84              | 0.16           | 5.51             | 91.84              | 5.51             | 88.4             |
| 2                | 77.62              | .3232              | 0.3282             | 90.6               | 0.66           | 6.45             | 90.6               | 6.48             | 84.2             |
| 3                | 80.98              | .3197              | 0.3257             | 92.12              | 0.13           | 5.04             | 92.12              | 5.04             | 88.6             |
| 4                | 80.16              | .3200              | 0.3255             | 91.75              | 0.35           | 5.00             | 91.75              | 5.01             | 86.1             |
| 5                | 77.03              | .3220              | 0.3271             | 90.33              | 0.61           | 5.84             | 90.33              | 5.87             | 84.1             |
| 6                | 73.67              | .3258              | 0.3293             | 88.76              | 1.35           | 7.14             | 88.76              | 7.26             | 79.4             |
| 7                | 82.43              | .3178              | 0.3237             | 92.76              | 0.15           | 4.05             | 92.76              | 4.05             | 87.9             |
| 8                | 82.21              | .3196              | 0.3255             | 92.66              | 0.19           | 4.99             | 92.66              | 4.99             | 87.9             |
| 9                | 81.19              | .3194              | 0.3241             | 92.21              | 0.77           | 4.42             | 92.21              | 4.48             | 80.2             |
| 10               | 76.11              | .3243              | 0.329              | 89.9               | 0.74           | 6.89             | 89.9               | 6.92             | 84               |
| 11               | 82.28              | .3178              | 0.3236             | 92.69              | 0.19           | 4.00             | 92.69              | 4.00             | 87.3             |
| <b>TOTAL</b>     | <b>874.03</b>      | <b>3.5302</b>      | <b>3.5883</b>      | <b>1005.62</b>     | <b>5.30</b>    | <b>59.33</b>     | <b>1005.62</b>     | <b>59.61</b>     | <b>938.10</b>    |
| <b>MEAN</b>      | <b>79.46</b>       | <b>.3209</b>       | <b>.3262</b>       | <b>91.42</b>       | <b>0.48</b>    | <b>5.39</b>      | <b>91.42</b>       | <b>5.42</b>      | <b>85.28</b>     |
| <b>S.D.</b>      | <b>2.91</b>        | <b>.0026</b>       | <b>.0020</b>       | <b>1.33</b>        | <b>0.38</b>    | <b>1.08</b>      | <b>1.33</b>        | <b>1.11</b>      | <b>3.22</b>      |
| <b>RANGE</b>     | <b>82.43-73.67</b> | <b>.3858-.3178</b> | <b>0.3293-3236</b> | <b>92.76-88.76</b> | <b>1.35-13</b> | <b>7.14-4.00</b> | <b>92.76-88.76</b> | <b>7.26-4.00</b> | <b>88.6-79.4</b> |
| <b>AVER DEV.</b> | <b>2.44</b>        | <b>.0021</b>       | <b>.0017</b>       | <b>1.11</b>        | <b>0.31</b>    | <b>0.88</b>      | <b>1.11</b>        | <b>0.90</b>      | <b>2.64</b>      |
| <hr/>            |                    |                    |                    |                    |                |                  |                    |                  |                  |
| Coker 130        | Hunter L           | Hunter a           | Hunter B           |                    |                |                  |                    |                  |                  |
| 1                | 89.63              | 0.15               | 5.42               |                    |                |                  |                    |                  |                  |
| 2                | 88.10              | 0.66               | 6.27               |                    |                |                  |                    |                  |                  |
| 3                | 89.98              | 0.13               | 4.98               |                    |                |                  |                    |                  |                  |
| 4                | 89.53              | 0.36               | 4.94               |                    |                |                  |                    |                  |                  |
| 5                | 87.76              | 0.61               | 5.69               |                    |                |                  |                    |                  |                  |
| 6                | 85.83              | 1.35               | 6.85               |                    |                |                  |                    |                  |                  |
| 7                | 90.79              | 0.15               | 4.03               |                    |                |                  |                    |                  |                  |
| 8                | 90.67              | 0.19               | 4.95               |                    |                |                  |                    |                  |                  |
| 9                | 90.10              | 0.78               | 4.38               |                    |                |                  |                    |                  |                  |
| 10               | 87.23              | 0.75               | 6.65               |                    |                |                  |                    |                  |                  |
| 11               | 90.70              | 0.19               | 3.98               |                    |                |                  |                    |                  |                  |
| <b>TOTAL</b>     | <b>980.32</b>      | <b>5.32</b>        | <b>58.14</b>       |                    |                |                  |                    |                  |                  |
| <b>MEAN</b>      | <b>89.12</b>       | <b>0.48</b>        | <b>5.29</b>        |                    |                |                  |                    |                  |                  |
| <b>S.D.</b>      | <b>1.65</b>        | <b>0.39</b>        | <b>0.99</b>        |                    |                |                  |                    |                  |                  |
| <b>RANGE</b>     | <b>90.79-85.83</b> | <b>1.35-13</b>     | <b>6.85-3.98</b>   |                    |                |                  |                    |                  |                  |
| <b>AVER DEV.</b> | <b>1.37</b>        | <b>0.31</b>        | <b>0.81</b>        |                    |                |                  |                    |                  |                  |

FIGURE 9



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FIGURE 10



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| 5149    | Yxy, Y   | Yxy, x   | Yxy, Y   | Lab, L | Lab, a | Lab, b | LCh, L | LCh, C | LCh, h |
|---------|----------|----------|----------|--------|--------|--------|--------|--------|--------|
| 68-1    | 65.75    | 0.3351   | 0.34     | 84.86  | 0.72   | 11.9   | 84.86  | 11.92  | 86.6   |
| 68-1    | 62.54    | .3458    | 0.3474   | 83.19  | 2.14   | 15.84  | 83.19  | 15.98  | 82.4   |
| 68-1    | 62.56    | 0.3458   | 0.3474   | 83.2   | 2.14   | 15.85  | 83.2   | 15.99  | 82.4   |
| 8-1     | 84.72    | .3196    | 0.3278   | 93.76  | 0.89   | 5.87   | 93.76  | 5.93   | 98.6   |
| 68-1    | 64.97    | .3316    | 0.3354   | 84.46  | 1.17   | 9.81   | 84.46  | 9.87   | 83.3   |
| 17-2    | 64.42    | .3423    | 0.3436   | 84.18  | 2.26   | 14.19  | 84.18  | 14.36  | 81     |
| 17-3    | 60.97    | .3475    | 0.3475   | 82.36  | 2.74   | 16.03  | 82.36  | 16.26  | 80.4   |
| 17-15-1 | 64.02    | .3433    | 0.3444   | 83.97  | 2.34   | 14.57  | 83.97  | 14.75  | 80.9   |
| 21-1    | 59.32    | 0.3443   | 0.3445   | 81.46  | 2.64   | 14.41  | 81.46  | 14.64  | 79.7   |
| 21-3    | 63.64    | 0.34     | 0.3409   | 83.77  | 2.4    | 12.89  | 83.77  | 13.11  | 79.5   |
| 21-6    | 67.12    | 0.3372   | 0.3394   | 85.56  | 1.88   | 12.15  | 85.56  | 12.29  | 81.3   |
| 50-3-1  | 61.26    | 0.3502   | 0.3511   | 82.51  | 2.4    | 17.63  | 82.51  | 17.79  | 82.3   |
| 67-1    | 64.34    | 0.3434   | 0.3442   | 84.13  | 2.48   | 14.58  | 84.13  | 14.78  | 80.4   |
| 68-1    | 64.12    | 0.3442   | 0.3447   | 84.02  | 2.58   | 14.85  | 84.02  | 15.07  | 80.2   |
| 68-2    | 70.21    | 0.3428   | 0.3447   | 87.09  | 2.05   | 15.04  | 87.09  | 15.17  | 82.3   |
| 68-3    | 63.81    | 0.3457   | 0.3468   | 83.86  | 2.35   | 15.76  | 83.86  | 15.93  | 81.6   |
|         |          |          |          |        |        |        |        |        |        |
|         |          |          |          |        |        |        |        |        |        |
|         |          |          |          |        |        |        |        |        |        |
|         |          |          |          |        |        |        |        |        |        |
| 5149    | Hunter L | Hunter a | Hunter b |        |        |        |        |        |        |
| 68-1    | 81.08    | 0.71     | 10.89    |        |        |        |        |        |        |
| 68-1    | 79.08    | 2.08     | 14       |        |        |        |        |        |        |
| 68-1    | 79.09    | 2.09     | 14.02    |        |        |        |        |        |        |
| 8-1     | 92.04    | 0.91     | 5.81     |        |        |        |        |        |        |
| 68-1    | 80.6     | 1.15     | 9.06     |        |        |        |        |        |        |
| 17-2    | 80.25    | 2.21     | 12.75    |        |        |        |        |        |        |
| 17-3    | 78.08    | 2.68     | 14.09    |        |        |        |        |        |        |
| 17-15-1 | 80.01    | 2.29     | 13.05    |        |        |        |        |        |        |
| 21-1    | 77.01    | 2.56     | 12.73    |        |        |        |        |        |        |
| 21-3    | 79.77    | 2.35     | 11.65    |        |        |        |        |        |        |
| 21-6    | 81.92    | 1.86     | 11.14    |        |        |        |        |        |        |
| 50-3-1  | 78.26    | 2.33     | 15.36    |        |        |        |        |        |        |
| 67-1    | 80.2     | 2.43     | 13.07    |        |        |        |        |        |        |
| 68-1    | 80.07    | 2.53     | 13.28    |        |        |        |        |        |        |
| 68-2    | 83.79    | 2.04     | 13.68    |        |        |        |        |        |        |
| 68-3    | 79.87    | 2.3      | 14       |        |        |        |        |        |        |

FIGURE 11



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| <b>5616</b> | <b>Y<sub>XY</sub>, Y</b> | <b>Y<sub>XY</sub>, X</b> | <b>Y<sub>XY</sub>, Y</b> | <b>Lab. L</b> | <b>Lab.a</b> | <b>Lab.b</b> | <b>LCh,L</b> | <b>LCh,C</b> | <b>LCh,h</b> |
|-------------|--------------------------|--------------------------|--------------------------|---------------|--------------|--------------|--------------|--------------|--------------|
| 11-1        | 72.26                    | 0.3215                   | 0.3254                   | 88.09         | 1.1          | 5.06         | 88.09        | 5.17         | 77.8         |
| 11-2        | 58.69                    | 0.3284                   | 0.3335                   | 81.12         | 0.6          | 8.36         | 81.12        | 8.38         | 85.9         |
| 11-2        | 52.78                    | 0.3358                   | 0.3335                   | 77.74         | 3.55         | 9.22         | 77.74        | 9.87         | 69           |
| 11-1        | 72.03                    | 0.3312                   | 0.3338                   | 87.98         | 1.72         | 9.52         | 87.98        | 9.67         | 79.8         |
| 11-1        | 72.34                    | 0.3295                   | 0.332                    | 88.13         | 1.79         | 8.64         | 88.13        | 8.82         | 78.4         |
| 11-1        | 71.98                    | 0.3295                   | 0.3313                   | 87.95         | 2.09         | 8.39         | 87.95        | 8.64         | 76.1         |
| 11-1        | 73.01                    | 0.3256                   | 0.3305                   | 88.45         | 0.68         | 7.51         | 88.45        | 7.54         | 84.9         |
| 17-1-2      | 75.85                    | 0.3274                   | 0.3306                   | 89.78         | 1.52         | 7.94         | 89.78        | 8.08         | 79.3         |
| 17-3-1      | 72.6                     | 0.3271                   | 0.3303                   | 88.25         | 1.48         | 7.66         | 88.25        | 7.8          | 79.1         |
| 17-4-1      | 69.02                    | 0.3352                   | 0.3377                   | 86.51         | 1.78         | 11.37        | 86.51        | 11.5         | 81.2         |
| 25-11-1     | 69.5                     | 0.3364                   | 0.3401                   | 86.75         | 1.26         | 12.41        | 86.75        | 12.47        | 84.2         |
| 25-28-1     | 72.21                    | 0.3324                   | 0.3343                   | 88.06         | 2.09         | 9.9          | 88.06        | 10.11        | 78.2         |
| 25-36-2     | 70.46                    | 0.3327                   | 0.3353                   | 87.22         | 1.73         | 10.22        | 87.22        | 10.36        | 80.5         |
| 35-35-1     | 75.59                    | 0.3268                   | 0.3299                   | 89.66         | 1.56         | 7.58         | 89.66        | 7.73         | 78.4         |
| 50-12-1     | 73.13                    | 0.3284                   | 0.3316                   | 88.5          | 1.46         | 8.36         | 88.5         | 8.48         | 80.1         |
| KS-11-2     | 65.33                    | 0.3371                   | 0.3388                   | 84.65         | 2.07         | 11.83        | 84.65        | 12           | 80.1         |
| <hr/>       |                          |                          |                          |               |              |              |              |              |              |
| <b>5616</b> | <b>Hunter L</b>          | <b>Hunter a</b>          | <b>Hunter b</b>          |               |              |              |              |              |              |
| 11-1        | 85                       | 1.09                     | 4.89                     |               |              |              |              |              |              |
| 11-2        | 76.61                    | 0.58                     | 7.64                     |               |              |              |              |              |              |
| 11-2        | 72.64                    | 3.38                     | 8.22                     |               |              |              |              |              |              |
| 11-1        | 84.87                    | 1.72                     | 8.97                     |               |              |              |              |              |              |
| 11-1        | 85.05                    | 1.79                     | 8.2                      |               |              |              |              |              |              |
| 11-1        | 84.84                    | 2.08                     | 7.96                     |               |              |              |              |              |              |
| 11-1        | 85.44                    | 0.67                     | 7.18                     |               |              |              |              |              |              |
| 17-1-2      | 87.08                    | 1.52                     | 7.62                     |               |              |              |              |              |              |
| 17-3-1      | 85.2                     | 1.48                     | 7.31                     |               |              |              |              |              |              |
| 17-4-1      | 83.07                    | 1.76                     | 10.52                    |               |              |              |              |              |              |
| 25-11-1     | 83.36                    | 1.25                     | 11.43                    |               |              |              |              |              |              |
| 25-28-1     | 84.97                    | 2.08                     | 9.32                     |               |              |              |              |              |              |
| 25-36-2     | 83.94                    | 1.72                     | 9.56                     |               |              |              |              |              |              |
| 35-35-1     | 86.94                    | 1.57                     | 7.29                     |               |              |              |              |              |              |
| 50-12-1     | 85.51                    | 1.46                     | 7.96                     |               |              |              |              |              |              |
| KS-11-2     | 80.82                    | 2.04                     | 10.81                    |               |              |              |              |              |              |

FIGURE 12



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| BC       | Yxy, Y   | Yxy, x   | Yxy, y   | Lab, L | Lab, a | Lab, b | LCh, L | LCh, C | LCh, h |
|----------|----------|----------|----------|--------|--------|--------|--------|--------|--------|
| 12 Green | 33.34    | 0.3779   | 0.3717   | 66.01  | 4.24   | 24.18  | 66.01  | 24.54  | 80.1   |
| 22 Brown | 38.18    | 0.3778   | 0.3662   | 68.15  | 6.18   | 23.31  | 68.15  | 24.11  | 75.2   |
| 3 Red    | 24.23    | 0.4055   | 0.3728   | 56.31  | 10.96  | 25.52  | 56.31  | 27.77  | 66.9   |
| 4 Ivory  | 46.84    | 0.3657   | 0.3599   | 74.08  | 4.6    | 21.13  | 74.08  | 21.62  | 77.8   |
|          |          |          |          |        |        |        |        |        |        |
| BC       | Hunter L | Hunter a | Hunter B |        |        |        |        |        |        |
| 12 Green | 59.44    | 3.79     | 17.92    |        |        |        |        |        |        |
| 22 Brown | 61.78    | 5.62     | 17.69    |        |        |        |        |        |        |
| 3 Red    | 49.22    | 9.42     | 17.14    |        |        |        |        |        |        |
| 4 Ivory  | 68.43    | 4.31     | 17.02    |        |        |        |        |        |        |

**FIGURE 13**